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British Columbia Exploration and Development Highlights for 1991

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BRITISH COLUMBIA
EXPLORATION AND DEVELOPMENT HIGHLIGHTS FOR 1991

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INTRODUCTION

The year 1991 was again one of significant developments in British Columbia, but also of severely decreased exploration activity, particularly by junior companies and individual prospectors. These proven mine finders struggled against a lack of investor confidence, softening base and precious metal prices, rising costs, increased concern over land alienation, and mounting offshore competition.

In spite of these difficulties, British Columbia's mineral resources proved worthy of the challenge, and the junior sector confirmed its resilience, innovation and effectiveness by making significant progress in two major, large-tonnage copper-gold projects, FISH LAKE and KEMESS. These, and others, are the subject of this Review.

Exploration expenditures in 1991 are anticipated to total approximately $80 million, a significant decrease from $143 million in 1990. Activity was primarily in the central and northern parts of the province, in pursuit of precious and base metal targets.

New mineral claims staked for the year are estimated at 65 000, a drop of 34 per cent from the 98 256 staked in 1990.

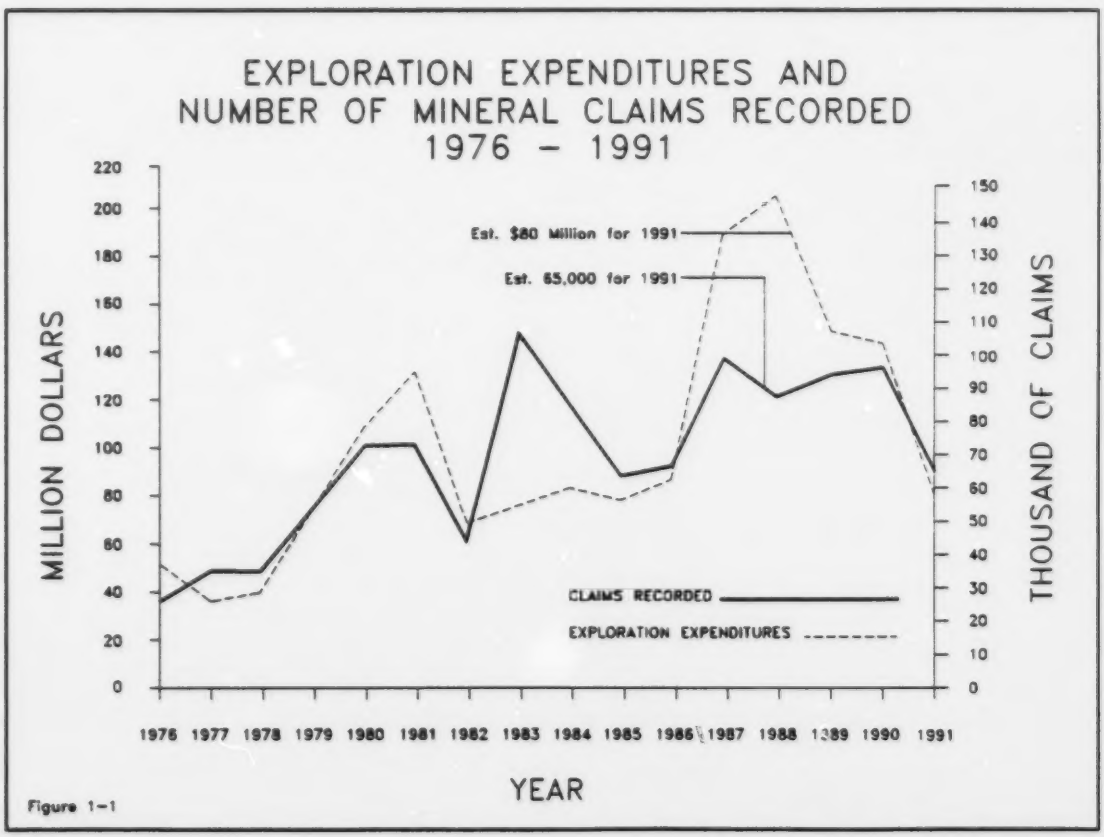


Figure 1-1

LOCATION OF PROJECTS

NEW MINES ▲

DEVELOPMENT STAGE ●

ADVANCED EXPLORATION STAGE ■

MINES

Total value of British Columbia's mineral production for 1991 is estimated at $2.8 billion compared to approximately $3.0 billion for the year previous. Copper remains the most important metal by far, with a projected production of 348 000 tonnes, worth in excess of $875 million. Coal continues at the top of the solid mineral production list with an anticipated output of 25 million tonnes valued at $950 million. Gold production is projected at 18 million grams (about 579 720 ounces) valued at $240 million, compared to 16.4 million grams (527 280 ounces) in 1990. This represents an increase of 1.6 million grams (51 440 ounces), or 9.7 per cent, due primarily to the opening of the SNIP mine which was, in part, offset by the closing of the BLACKDOME mine. Silver production is anticipated to be down 23 per cent to 490 million grams (15.75 million ounces) valued at $74 million; a drop in value of 56 per cent.

Three new metal mines opened in 1991. The official opening of the $65 million SNIP mine (60% – Cominco Ltd. and 40% – Prime Resources Group Inc.) was on July 25, 1991, although production actually began six months earlier, on January 25, 1991 with the commissioning of the mill. The plant had been designed for a production rate of 300 tonnes per day and this was achieved six days after start up. From February 1st to March 15th the mill processed an average of 320 tonnes per day with an overall mill recovery of 91 per cent. Diluted ore reserves at start up were 940 000 tonnes grading 28.5 grams per tonne gold, allowing for a projected mine life of 10 years with an annual output of 2.9 million grams (93 000 ounces). During the first six months of life, SNIP operated 10 to 20 per cent above design capacity and within projected costs.

The official re-opening of the GOLDSTREAM copper-zinc mine, (50% – Bethlehem Resources Corporation, 50% – Goldnev Resources Inc.) was on July 9th, 1991. The 1350 tonne-per-day concentrator and mine was built in 1983 by Noranda Inc. at a cost of $72 million and operated for 11 months to April, 1984. Closure was due to low copper prices. Upon re-opening, the deposit contained 1.86 million tonnes, grading 4.81 per cent copper and 3.06 per cent zinc, sufficient for five years of operation. From June 1st to July 31, 1991, a total of 69 505 tonnes were milled grading 4.11 per cent copper yielding 2 567 191 kilograms (5 654 607 pounds) of copper at a recovery rate of 89.9 per cent. The rehabilitation of the mine was completed ahead of schedule and under budget at a cost of $4.4 million.

On March 5, 1991, Westmin Resources Ltd. announced it would go to production from the Facecut-35 zone on the SB property of Tenajon Resource Corporation which is adjacent to the PREMIER GOLD mine. At the time of the announcement, diluted proven and probable geological reserves for the Facecut-35 zone were 96 209 tonnes grading 9.91 grams per tonne gold, 65.9 grams per tonne silver, 0.32 per cent copper, 0.67 per cent lead and 3.85 per cent zinc. Mill and tailings facilities of the nearby Premier Gold mine are being used to process the ore which was expected to be sufficient for six months of operation.

ADVANCED PROJECTS AND IMPORTANT DEVELOPMENTS

Several projects at the advanced exploration, preproduction or production stage, reached important milestones.

In the extreme northwest corner of the province the WINDY CRAGGY Cu-Au-Co project of Geddes Resources Ltd. continued in the Mine Development Process with submission of a revised mine plan late in 1990. This was an addendum to the original Stage 1 submission.

International Corona Corp. had spectacular results from a significant underground drill and development program, and carried out engineering and environmental studies at their rich ESKAY CREEK Au-Ag deposit. In mid-September Placer Dome Inc. and International Corona Corp. reached a joint venture agreement with a view to bringing the project to production by early 1994. Each company owns 50 per cent of the deposit, with Placer funding all exploration, development and construction costs to a total of $240 million. Reserves at ESKAY CREEK currently stand at 4.7 million tonnes grading 22.97 grams per tonne gold and 827 grams per tonne silver, at a cutoff grade of 3.43 grams per tonne gold. There are additional significant base metal values. Most important for this project, and several others in the region, construction of the 37 kilometre access road from Bob Quinn Lake to the confluence of Volcano Creeek and Iskut River is well underway.

Approval of the *Mine Development Certificate* for the STRONSAY (formally CIRQUE) Zn-Pb-Ag project was announced September 24, 1991. The deposit, owned 70 per cent by Curragh Resources Inc. and 30 per cent by Asturiana De Zinc of Spain, is located 280 kilometres north of MacKenzie, the nearest railhead. It has total reserves of 52.2 million tonnes grading 8 per cent zinc, 2 per cent lead and 47 grams per tonne silver. Construction is planned to start in 1992 on this $140 million project. It is anticipated to process 3500 tonnes of ore per day and employ 200 during construction and more then 300 for the expected 15 year plus of mine life.

Table 1 - 1
New Mines, Development and Advanced Exploration Projects

Company Name	Project Name	Commodity	Estimated Tonnes (000s)	Estimated Grade	Estimated Employment
New Mines					
Cominco Ltd., Prime Resources Group Inc.	Snip	Au	940	28.5 g/t Au	150
Bethlehem Resources Corp. Goldnev Resources Inc.	Goldstream	Cu, Zn	1860	4.81% Cu, 3.06% Zn	100
Westmin Resources Ltd. Tenajon Resources Corp.	SB	Au, Ag, Cu, Pb, Zn	96.2	9.91g/t Au, 65.9 g/t Ag, 0.32% Cu, 0.67% Pb, 3.85% Zn	30
Development (Production Decision Announced)					
Westmin Resources Ltd.	Gap Zone/Myra Falls	Cu, Pb, Zn, Ag, Au	217	2.7% Cu, 1.1% Pb, 16.6% Zn, 213 g/t Ag, 3.4 g/t Au	568
Advanced Exploration					
Geddes Resources Ltd.	Windy Craggy	Cu, Au, Ag, Co	210 000	1.59% Cu, 0.18 g/t Au, 3.62 g/t Ag, 0.09% Co	600
International Corona Corp. Prime Resources Group Inc. Placer Dome Inc.	Eakay Creek	Au, Ag	4730	22.97 g/t Au, 827 g/t Ag	200+
Curragh Resources Inc. Asturiana De Zinc	Stronsay (Cirque)	Zn, Pb, Ag	52 200	8% Zn, 2% Pb, 47 g/t Ag	300+
Placer Dome Inc	Mt. Milligan	Cu, Au	400 000	0.2% Cu, 0.48 g/t Au	350+
Noranda Inc.	Bell	Cu, Au	150 000		
Gibraltar Mines Ltd. Newcoast Silver Mines Ltd.	Gibraltar North	Cu	40 000	0.4% Cu	
Cominco Ltd. Redfern Resources Ltd.	Tulsequah Chief	Cu, Pb, Zn, Au, Ag	7270	1.55% Cu, 1.22% Pb, 6.81% Zn 2.74 g/t Au, 109.37 g/t Ag	
Newhawk Gold Mines Ltd. Granduc Gold Mines Ltd.	Sulphurets	Au, Ag	500.8	14.33 g/t Au, 617 g/t Ag	50 - 60
Canarc Resources Corp. Suntac Minerals Corp.	Polaris Taku	Au	1454.5	15.43 g/t Au	
Teeshin Resources Ltd. Timmins Nickel Inc.	Dome Mountain	Au, Ag	294.5	12.17 g/t Au, 80.22 g/t Ag	55
Equinox Resources Ltd. Cheni Gold Mines Ltd.	J & L / Main Zone	Zn, Pb, Au, Ag	4770	4.3% Zn, 2.7% Pb, 7.2 g/t Au, 7.4 g/t Ag	80 - 90
	Yellow Jacket Zone	Zn, Pb, Ag	910	7.4% Zn, 2.6% Pb, 55 g/t Ag	
Fairfield Minerals Ltd.	Elk	Au	212.7	21.7 g/t Au	
Westpine Metals Ltd.	Taseko	Cu, Au	9521.8	0.582% Cu, 0.754 g/t Au	
Taseko Mines Ltd	Fish Lake	Cu, Au	545	0.32% Cu, 0.548 g/t Au	

Work continues on optimizing reserves, grades, plant design and mining plan for the large MOUNT MILLIGAN Cu-Au project of Continental Gold Corp., a wholly owned subsidiary of Placer Dome Inc. The results of the feasibility study is expected by year-end. This vast Cu-Au alkalic porphyry system, hosted by Upper Triassic to Lower Jurassic volcanic rocks of the Takla Group and high-level intrusive rocks, has been under continuous exploration by Continental Gold Corporation and B.P. Resources Canada Inc. since 1986. In November 1990 it was purchased by Placer Dome Inc. The project is at Stage 1 in the Mine Development Process. Work during 1991 included extensive large-diameter drilling for better delineation of reserves, metallurgical research, preparation of mill and dump sites, and a feasibility study. The results of the feasibility study are expected by year end.

A number of other significant developments occurred at five producing mines. The GOLDEN BEAR gold mine, of North American Metals Corporation and Homestake Mining (B.C.) Ltd., had solved most of its production and milling problems, and the resulting high production costs. As a result, the project had a fair year with a final projected production of at least 1500 kilograms (52 000 ounces). It is also significant that Homestake increased its interest in the project by buying the Chevron Minerals' interest.

The BELL COPPER Mine of Noranda Inc. successfully completed a major drilling program, started in 1990, at the perimeter of the pit. Significant new ore reserves, which could extend mine life by as much as 20 years, were indicated by this program. Access to these reserves, however, will require a significant push back of the pit walls. Other possible sources of ore could be nearby properties such as Granisle, Morrison and Hearne Hill. The mine is also experimenting with leaching its extensive waste dumps, a technique that has been successfully used at the GIBRALTAR copper mine and produced copper at 79 cents per kilogram (36 cents per pound).

The discovery of the GIBRALTAR NORTH zone by Gibraltar Mines Ltd. and Newcoast Silver Mines Ltd. was the direct result of their investment in geological modelling and a subsequent drill program. This completely blind orebody of approximately 30 to 40 million tonnes, better than run-of-mine grade and with significant gold and silver credits, could well be the faulted extension of the GIBRALTAR WEST zone.

A similar success, again due to good geological modelling followed by drilling, was achieved by Westmin Resources Ltd. at their Cu-Pb-Zn-Ag-Au MYRA FALLS mine with the discovery, in May, of the GAP ZONE. This new, blind orebody is located between the Lynx and H-W mines, in upper H-W stratigraphy, thus defining a new exploration target. It is considerably better than run-of-mine grade, particularly for gold, and has been tested over a strike length of 250 metres. A decision to proceed with the development of the GAP ZONE was announced August 5th and the access drift from the existing H-W 18-Level workings is well under way.

Underground development started earlier in the year at the Pb-Zn-Ag-Au SAMATOSUM open-pit mine of Minnova Inc. and Rea Gold Corporation, and underground drilling discovered a new gold zone in April. The new zone is about 50 metres below current development and strikes almost parallel to the main ore horizon. Although severely depressed silver prices have been threatening an earlier than planned mine closure in October 1992, the new discovery might well extend the life of the mine.

EXPLORATION HIGHLIGHTS

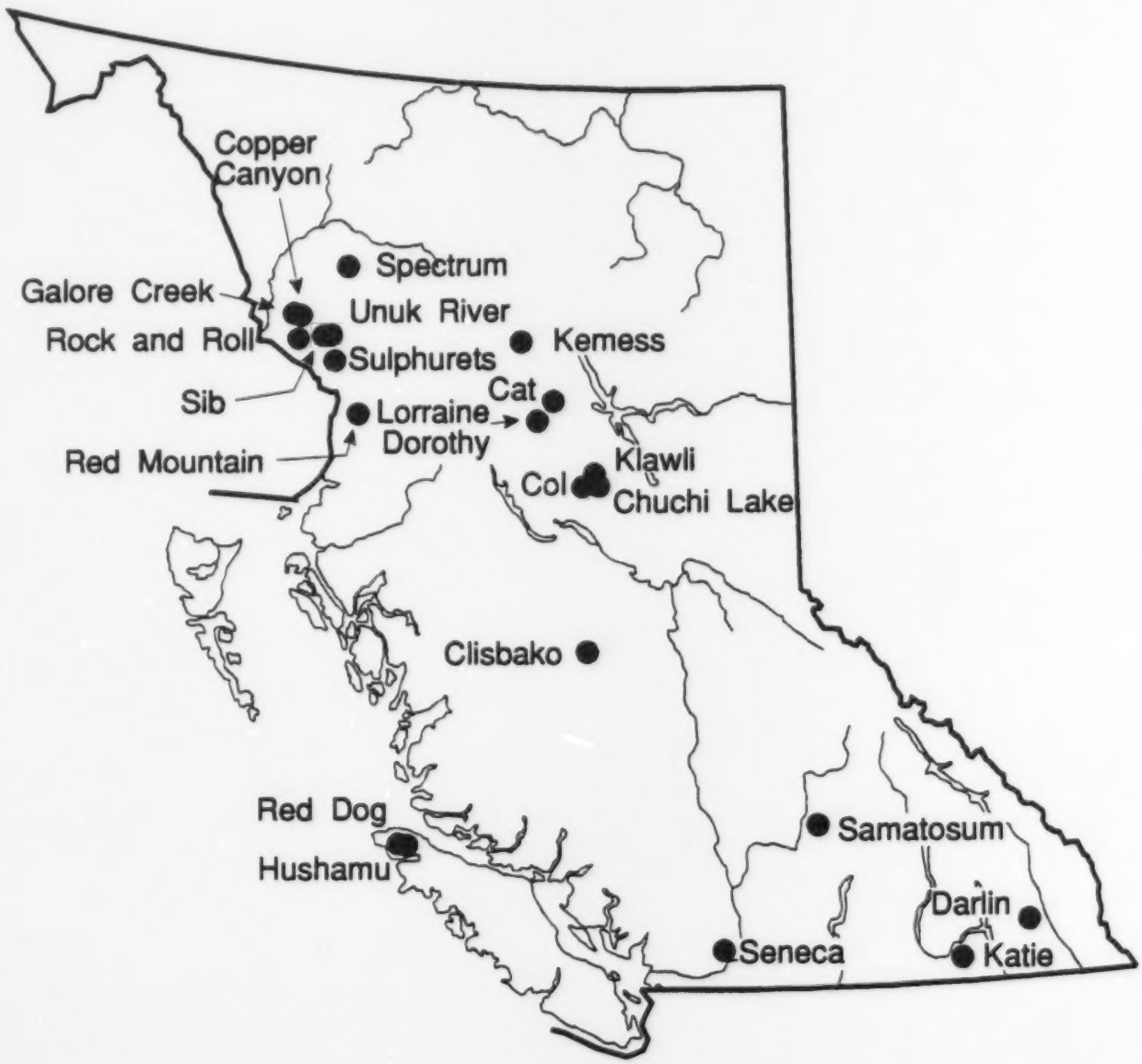
Following the trend that began in 1988-89, exploration interest continued for multi-element deposits of large size, such as Cu-Au porphyry deposits, or those with high unit values, such as volcanogenic massive sulphide and high-quality precious metal deposits. The main targets of exploration are summarized below:

COPPER – GOLD PORPHYRY DEPOSITS

Copper - gold porphyry systems hosted by Upper Triassic to Lower Jurassic and younger volcanic sequences in the Intermontane Belt continued to be the most popular exploration target in the Province. Exploration using this model was responsible for sustained activity in the Quesnel Trough, particularly from Fort St. James to the Toodoggone area, in the Stewart–Stikine region, in the Cariboo plateau southwest of Williams Lake, in the Nelson–Salmo area, and on northern Vancouver Island.

In the Stikine region, Kennecott Canada Inc. and Hudson Bay Mining and Smelting Co. Ltd. completed a large drilling program, an extensive re-assaying program, and air and ground geophysics on and around the main GALORE CREEK deposit. Their objective was to extend reserves and better define smaller but much richer deposits which ring the main deposit. The main Galore Creek deposit, discovered in the 1950s, is in an Upper Triassic alkalic porphyry system hosted by coeval and cogenetic volcanic rocks. It has drill indicated reserves of 113 million tonnes grading 1.06 per cent copper, 0.445 gram per tonne gold and 8.57 grams per

1991
EXPLORATION HIGHLIGHTS



tonne silver.

Ten kilometres east of Galore Creek, Consolidated Rhodes Resources Ltd. completed a trenching program on the COPPER CANYON and COPPER PENNY properties, old prospects drilled by Amax in the late 1950s. This is another porphyry system similar in age and setting to Galore Creek. A 1990 drill program by Consolidated Rhodes Resources Ltd. on three zones produced drill-indicated reserves of 32.5 million tonnes grading 0.75 per cent copper, 1.16 grams per tonne gold and 17.1 grams per tonne silver. A 0.5 per cent copper equivalent cut-off grade, gives a geological potential for an additional 90 million tonnes along the strike extensions of the three known zones.

Newhawk Gold Mines Ltd. and Granduc Gold Mines Ltd. carried out an extensive surface exploration program, including prospecting, geological mapping, sampling and diamond drilling on their SULPHURETS property, located 65 kilometres northwest of Stewart. Newhawks' extensive holdings include at least four large Cu±Au±Mo zones hosted by intensely altered Lower to Middle Jurassic volcanic and sedimentary rocks of the Stewart Complex. These are intruded by structurally controlled, alkalic to sub-alkalic plutons of similar age.

Less than 50 kilometres southeast of the Toodoggone precious metals camp, El Condor Resources Ltd. carried out an extensive and very successful diamond drilling program on their KEMESS Au-Cu project as a follow up to an equally successful 1990 drill program. This large property consists of at least four Au-Cu prophyry zones hosted by Late Triassic to Lower Jurassic, high level calcalkalic intrusions and associated volcanic rocks. The property is strategically located close to the Cheni Gold Mines access road and possible rail transportation. Drilling to date on the KEMESS SOUTH deposit (60% – El Condor Resources Ltd., 40% – St. Philips Resources Inc.) has indicated reserves of 127 million tonnes grading 0.23 per cent copper and 0.582 gram per tonne gold in a continuous, tabular deposit open to expansion and including an upper supergene enriched blanket containing native copper and chalcocite.

Drilling results from the KEMESS NORTH deposit (100% – El Condor Resources Ltd.) has indicated reserves of 140 million tonnes grading 0.17 per cent copper and 0.343 gram per tonne gold. This deposit is located 6 kilometres north of the South deposit and is within a larger zone enriched in sulphides.

Farther to the south, along more than 250 kilometres of the same Upper Triassic to Lower Jurassic volcanic belt known as the Quesnel Trough, work was done on several other similar projects and most included drilling. Notable amongst these are LORRAINE and DOROTHY of Kennco Exploration, CAT of B.P. Resources Canada Inc. and Lysander Gold Corp., KLAWLI of Rio Algom Exploration Inc., CHUCHI LAKE of B.P. Resources Canada Inc., and COL of Kookaburra Gold Corp.

Approximately 130 kilometres southwest of Williams Lake, outside of the Quesnel Trough, Taseko Mines Ltd. carried out a 10-hole, large-diameter drilling program at their FISH LAKE Au-Cu porphyry project. This drilling achieved excellent core recovery and was successful in significantly upgrading continuity and grade of mineralization to a depth of 800 metres. This program, and 168 other drill holes completed by previous operators, confirmed an initial reserve block of 545 million tonnes grading 0.32 per cent copper and 0.548 gram per tonne gold. The FISH LAKE Au-Cu deposit is associated with an Upper Cretaceous calc-alkalic quartz diorite stock and dike complex which cuts coeval, and probably cogenetic, volcanic rocks. The deposit was first discovered by two prospectors in the early 1930s, and since 1962 has been drilled by several companies, large and small, with mixed success.

On northern Vancouver Island, Moraga Resources Ltd. carried out further drilling on the HUSHAMU zone of the EXPO property. It was optioned from BHP-Utah Ltd. which operates the nearby ISLAND COPPER mine. Current reserves at HUSHAMU are estimated at 118 million tonnes grading 0.28 per cent copper, 0.01 per cent molybdenum and 0.342 gram per tonne gold. Moraga and Crew Natural Resources Ltd. also carried out a preliminary mineral inventory and optimized pit study on their nearby RED DOG zone which yielded a reserve of 41.1 million tonnes grading 0.26 per cent copper, 0.006 per cent molybdenum and 0.342 gram per tonne gold. Both deposits are viewed as potential sources of ore for the nearby BHP–Utah Ltd., ISLAND COPPER mine whose reserves will be depleted in 1997. Moraga Resources Ltd. was acquired by Yordex Resources Inc. in August.

Near Salmo, within the Rossland volcanic belt, Noranda Exploration Co. Ltd., Hemlo Gold drilled the KATIE property which is held under option from Yellowjack Resources Ltd. This property is a large Cu -Au porphyry system associated with Lower Jurassic diorite and volcanic rocks of the Rossland Group. Drill holes cut mineralized sections from 60 to 139 metres in length, grading from 0.36 to 0.24 per cent copper and from 0.308 to 0.240 gram per tonne gold.

Table 1-2
1991 Exploration Highlights

Company Name	Project Name	Commodity	Estimated Tonnes (000s)	Estimated Grade	Exploration Expenditures ($ Millions)
Kennecott Canada Inc., Hudson Bay Mining and Smelting Co. Ltd.	Galore Creek	Cu, Au, Ag	113 000	1.06% Cu, 0.445 g/t Au 8.57 g/t Ag	3.35
Consolidated Rhodes Resources Ltd.	Copper Canyon	Cu, Au, Ag	32 450	0.75% Cu, 1.16 g/t Au, 17.1g/t Ag	<1
Newhawk Gold Mines Ltd., Granduc Gold Mines Ltd.	Sulphurets	Cu, Au	n/a	n/a	1.5
El Condor Resources Ltd., St Philips Resources Inc.	Kemess South	Cu, Au	127 000	0.23% Cu, 0.582 g/t Au	2.9 (incl. Kemess North)
El Condor Resources Ltd.	Kemess North	Cu, Au	140 000	0.17% Cu, 0.343 g/t Au	
Kennco Exploration	Lorraine/ Dorothy	Cu, Au	n/a	n/a	0.675
B. P. Resources Canada Inc., Lysander Gold Corp.	Cat	Cu, Au	n/a	n/a	0.4
Rio Algom Exploration Inc.	Klawli	Cu, Au	n/a	n/a	0.13
Jordex Resources Inc.	Hushamu	Cu, Au, Mo	118 000	0.28% Cu, 0.342 g/t Au 0.01% Mo	0.11
Jordex Resources Inc., Crew Natural Resources Ltd.	Red Dog	Cu, Au, Mo	41 136	0.26% Cu, 0.342 g/t Au, 0.006% Mo	0.17
Yellowjack Resources Ltd.	Katie	Cu, Au	n/a	n/a	0.9
American Fibre Corporation, Silver Butte Resources Ltd.	Sib	Au, Ag	n/a	n/a	3.75
Granges Inc, Springer Resources Ltd., Cove Resources Corp.	Unuk River	Au, Ag	n/a	n/a	n/a
Eurus Resources Corp., Thios Resources Inc.	Rock and Roll	Zn, Pb, Cu, Au, Ag	582	3.08% Zn, 0.79% Pb, 0.64% Cu 2.47g/t Au, 336g/t Ag	1.5
Minnova Inc.	Seneca	Zn, Cu, Au, Ag	1509.5	3.7% Zn, 0.63% Cu, 0.823g/t Au, 41.14g/t Ag	0.5
Chapleau Resources Ltd., Barkhor Resources Inc., Kokanee Explorations Ltd.	Darlin	Pb, Zn	n/a	n/a	0.3
Lac Minerals Inc,	Red Mountian	Au	340	12.68 g/t Au	1.5
Columbia Gold Mines Ltd., Eurus Resources Corp.	Spectrum	Au	275	15.77g/t Au	1
Minnova Inc., Eighty-Eight Resources Ltd.	Clisbako	Au	n/a	n/a	n/a

VOLCANOGENIC AND SEDIMENT-HOSTED MASSIVE SULPHIDE DEPOSITS

Volcanogenic massive sulphide targets in Paleozoic and Mesozoic submarine volcanic sequences continued to be the focus of exploration because of their relatively high unit value and multi-element nature.

Cominco Ltd. and Redfern Resources Ltd. completed another very successful drilling program at their TULSEQUAH CHIEF property, confirming and extending favourable drilling results obtained in 1990. Preliminary reserves at TULSEQUAH CHIEF have been increased to 7.27 million tonnes grading 1.55 per cent copper, 1.22 per cent lead, 6.81 per cent zinc, 2.74 grams per tonne gold and 109.37 grams per tonne silver.

American Fibre Corporation and Silver Butte Resources Ltd. completed a major diamond drilling program on the SIB deposit. Mineralization at SIB is similar in character and geologic setting, and only 5 kilometres southwest of Eskay's 21B zone.

Granges Inc., in joint venture with Springer Resources Ltd. and Cove Resources Corp., completed a drill program and obtained significant intersections of gold and silver values on the UNUK RIVER project. This property is only 5 kilometres south of the ESKAY Creek deposit and in a similar geologic setting.

Approximately 40 kilometres west of Eskay Creek, along the Iskut River, Eurus Resources Corp. and Thios Resources Inc. completed a program of diamond drilling, air and ground geophysics and geochemistry on the ROCK AND ROLL project, a volcanogenic massive sulphide target hosted by Triassic tuffs and argillites. Preliminary reserves for the BLACK DOG and SRV zones of this project are 582 000 tonnes grading 3.08 per cent zinc, 0.79 per cent lead, 0.64 per cent copper, 2.47 grams per tonne gold and 336 grams per tonne silver over a 700-metre strike length.

Along the Fraser Valley near Harrison Lake, Minnova Inc. continued detailed geological studies, followed by drilling on the SENECA project. This work to date has been rewarded with the discovery of the VENT zone and the FLEETWOOD zone in addition to the original SENECA deposit. These massive sulphide deposits are hosted by Jura-Cretaceous felsic volcanic rocks of the Harrison Lake Formation. Reserves at the SENECA are estimated at 1 509 500 tonnes grading 3.57 per cent zinc, 0.63 per cent copper, 0.823 grams per tonne gold and 41. 4 grams per tonne silver.

In the southeastern corner of the province, 8 kilometres south of the Cominco Ltd. SULLIVAN mine, Chapleau Resources Ltd., Barkhor Resources Inc. and Kokanee Explorations Ltd. (as operator), carried out a drill program on the DARLIN project. They encountered five massive sulphide beds from 15 to 60 centimetres thick in stratigraphy similar to that which hosts the Sullivan mine. Late in the year, Minnova Inc. optioned the contiguous HORN property from Kokanee Explorations Ltd.

VEIN AND TRANSITIONAL DEPOSITS

Epithermal and mesothermal veins and deposits that formed in a setting transitional between the classic epithermal environment and the deeper-seated porphyry environment are other important targets. Some of these deposits, such as the mesothermal veins of the SNIP gold mine and parts of the SULPHURETS (Brucejack Lake zone) property of Newhawk Gold Mines Ltd. and Granduc Gold Mines Ltd. are in British Columbia's Golden Triangle. At SULPHURETS work in 1991 was focused mostly on Cu-Au porphyry zones with bulk mineable potential.

Canarc Resource Corporation and Suntac Minerals Corporaton carried out a diamond drilling program at their POLARIS TAKU property, approximately 100 kilometres south of Atlin, and across the Taku river from the TULSEQUAH CHIEF massive sulphide deposits. This program was successful in extending the known limits of mineralization. At the start of the 1991 program total geological reserves stood at 1 454 500 tonnes grading 15.43 grams per tonne gold for a total of 20 412 kilograms (720 000 ounces) for the C-vein. Complete results of the 1991 program are pending.

Twenty-six kilometres west of the Stewart-Cassiar highway near the village of ISKUT, Columbia Gold Mines Ltd. and Eurus Resources Corporation carried out a major diamond drilling program on the SPECTRUM project. The objective was to test for high grade, structurally controlled gold zones and low grade disseminated Au-Cu mineralization hosted by intensely altered and andesitic volcanic rocks intruded by a Jura-Cretaceous quartz monozonite. Preliminary total reserve estimates for the higher grade zones are 275 000 tonnes grading 15.77 grams per tonne gold, using a 10.28 grams per tonne gold cut-off grade. Bulk tonnage estimates, including high grade reserves, are 8.393 million tonnes grading 1.268 grams per tonne gold and 0.18 per cent copper.

Lac Minerals Inc. completed a diamond drilling program on their RED MOUNTAIN gold property located 15 kilometres east of Stewart. This is a newly discovered structurally controlled, mesothermal vein system related to a porphyry environment. A preliminary reserve of 840 000 tonnes grading 12.68 grams per

tonne gold has been established for the MARC zone.

Forty kilometres east of Smithers, Teeshin Resources Ltd. and Timmins Nickel Inc., under a joint venture agreement, carried out a program of surface and underground drilling and drifting on the DOME MOUNTAIN project. Bulk samples were sent to the Equity Silver Mine and to the Premier Gold Mine for a custom milling test. Ore reserves are calculated at 294 500 tonnes grading 12.17 grams per tonne gold and 80.22 grams per tonne silver.

Approximately 100 kilometres west of Quesnel, Minnova Inc. carried out an extensive program of surface trenching and diamond drilling on the CLISBAKO Au-Ag deposit under option from Eighty-eight Resources Ltd. This new discovery, in a previously underexplored area, is in a structurally controlled epithermal system hosted by Tertiary acid volcanics.

A short distance by road north of Revelstoke, Equinox Resources Ltd. and Cheni Gold Mines Ltd. completed a major program of diamond drilling and underground development on their J & L project, a stratabound polymetallic vein system. Current probable and possible reserves on the MAIN zone are estimated at 4.77 million tonnes grading 4.3 per cent zinc, 2.7 per cent lead, 7.2 grams per tonne gold, 72 grams per tonne silver and 4.5 per cent arsenic. Additional reserves on the newly discovered YELLOWJACKET zone are 910 000 tonnes grading 7.4 per cent zinc, 2.6 per cent lead and 55 grams per tonne silver.

In the south central part of the province, 40 kilometres southeast of Merritt, Fairfield Minerals Ltd. completed an additional 37 diamond-drill holes on the ELK property, a quartz-sulphide mesothermal vein system of possible Tertiary age, hosted by the Jurassic Pennask granodiorite. A total of 107 holes drilled on this property since 1989 have traced the vein system over a strike length of 915 metres and 300 metres down dip. Drilling previous to the 1991 program indicated reserves of 212 730 tonnes grading 21.7 grams per tonne gold and 21.9 grams per tonne silver using a cut-off grade of 10.3 grams per tonne gold across a 2-meter width. An updated estimate of these reserves is expected soon.

Near Taseko Lake, 250 kilometres north of Vancouver, Westpine Metals Ltd. continued drilling on their TASEKO Cu-Au property. At least three zones of mineralization have been identified in Cretaceous volcanic rocks with intense argillic and silica alteration, and in the border phase of intrusive rocks of the Coast Range batholith. Mineable reserves for an open-pit operation have recently been calculated to be 9 521 800 tonnes grading 0.582 per cent copper and 0.754 gram per tonne gold.

SUMMARY AND A LOOK AT 1992

The year 1991 was one of significantly decreased exploration activity, but also one of important new developments. Junior companies and individual prospectors faced the brunt of hard times and struggled to carry on. The greatest obstacle was the shortage of risk capital. Notwithstanding this, British Columbia's exploration industry and world-class mineral endowment, proved their effectiveness and worth with significant progress in two major, large tonnage Au-Cu projects, FISH LAKE and KEMESS and in the discovery of new prospects such as the CLISBAKO.

In short, British Columbia is still a good place to explore and discover mines!

NOTE: Grade and tonnages cited in this paper are from information released by operators. The British Columbia Ministry of Energy, Mines and Petroleum Resources does not confirm the accuracy of these reported figures and is not liable for losses of any type resulting from their use. Monetary figures are in Canadian dollars.